CLAIMS

The invention claimed is:

1.   A wireless telephone device comprising:

a physical component for wireless communication; and

a processor coupled with the physical component, in which the processor is adapted to

establish an original leg of a telephone call connection using one of a CSV modality and a VoX modality;

transfer data of a voice conversation between the original leg and a voice channel that terminates in one of a speaker and a microphone pursuant to the telephone call connection;

receive an address signal encoding an access address;

make a handoff call to the access address responsive to receiving the address signal;

establish from the handoff call an alternate leg of the telephone call connection using the other one of the two modalities while the original leg is still established; and

then transfer data of the voice conversation between the voice channel and the alternate leg pursuant to the telephone call connection.

2.   The device of claim 1, in which the processor is further adapted to:

couple the alternate leg with the voice channel for transferring data between them.

3.   The device of claim 1, in which the processor is further adapted to:

tear down the original leg while transferring data of the voice conversation between the voice channel and the alternate leg.

4.   The device of claim 1, in which the processor is further adapted to:

exchange a modality handoff signal after transferring voice data over the original leg, and

in which the address signal is received responsive to exchanging the modality handoff signal.

5. The device of claim 4, in which
exchanging the modality handoff signal is performed by transmitting it over the original leg.

6. The device of claim 4, in which
exchanging the modality handoff signal is performed by receiving it over the original leg.

7. The device of claim 4, in which the processor is further adapted to:
access a registration server to learn a first address; and
in which exchanging the modality handoff signal is performed by transmitting it to the first address.

8. A network switch comprising:
a network interface for coupling to a network; and
a processor coupled with the network interface, in which the processor is adapted to
establish an original leg of a telephone call connection using one of a CSV modality and a VoX modality;
transfer data of a voice conversation between the original leg and a voice channel that terminates in one of a speaker and a microphone pursuant to the telephone call connection;
receive an address signal encoding an access address;
make a handoff call to the access address responsive to receiving the address signal;
establish from the handoff call an alternate leg of the telephone call connection using the other one of the two modalities while the original leg is still established; and
then transfer data of the voice conversation between the voice channel and the alternate leg pursuant to the telephone call connection.

9.   The network switch of claim 8, in which the processor is further adapted to:

        couple the alternate leg with the voice channel for transferring data
between them.

5   10.   The network switch of claim 8, in which the processor is further adapted to:

        tear down the original leg while transferring data of the voice
conversation between the voice channel and the alternate leg.

11.   The network switch of claim 8, in which the processor is further adapted to:

10   exchange a modality handoff signal after transferring voice data over
the original leg, and

        in which the address signal is received responsive to exchanging the modality
handoff signal.

15   12.   The network switch of claim 11, in which

        exchanging the modality handoff signal is performed by transmitting it over
the original leg.

13.   The network switch of claim 11, in which

20   exchanging the modality handoff signal is performed by receiving it over the
original leg.

14.   The network switch of claim 11, in which the processor is further adapted to:

        access a registration server to learn a first address; and

25   in which exchanging the modality handoff signal is performed by transmitting
it to the first address.

15.   The network switch of claim 8, in which the processor is further adapted to:

        receive data from both the original leg and the alternate leg; and

30   combine the data received from the original leg and from the alternate
leg to form a combined data stream of a single one of the CSV and VoX
modalities.

16.   The network switch of claim 15, in which the processor is further adapted to:

convert the data received from one of the original leg and the alternate leg to be of the other one of the CSV and VoX modalities prior to combining.

17. The network switch of claim 15, in which the processor is further adapted to:
    determine a difference in delay between transferring data along the original leg and the alternate leg; and
    adjusting a delay in one of the original leg and the alternate leg according to the difference.

18. The network switch of claim 8, in which the processor is further adapted to:
    receive data from both the original leg and the alternate leg; and
    analyze the exchange of data to detect a silent period.

19. A device comprising:
    a network interface for coupling to a network; and
    a processor coupled with the network interface, in which the processor is adapted to
    establish an original leg of a telephone call connection using one of a CSV modality and a VoX modality;
    transfer data of a voice conversation between the original leg and a voice channel that terminates in one of a speaker and a microphone pursuant to the telephone call connection;
    transmit an address signal encoding an access address;
    receive a handoff call at the access address;
    establish from the handoff call an alternate leg of the telephone call connection using the other one of the two modalities while the original leg is still established; and
    then transfer data of the voice conversation between the voice channel and the alternate leg pursuant to the telephone call connection.

20. The device of claim 19, in which the processor is further adapted to:
    couple the alternate leg with the voice channel for transferring data between them.

21.   The device of claim 19, in which the processor is further adapted to:

    tear down the original leg while transferring data of the voice

conversation between the voice channel and the alternate leg.

5 22.   The device of claim 19, in which the processor is further adapted to:

    receive an identity code about the original leg; and

    use the identity code for coupling the voice channel with the alternate

leg.

10 23.   The device of claim 19, in which the processor is further adapted to:

    exchange a modality handoff signal after transferring voice data over

the original leg, and

in which the address signal is received responsive to exchanging the modality

handoff signal.

15 24.   The device of claim 23, in which

    exchanging the modality handoff signal is performed by transmitting it over

the original leg.

20 25.   The device of claim 23, in which

    exchanging the modality handoff signal is performed by receiving it over the

original leg.

26.   The device of claim 23, in which the processor is further adapted to:

25   access a registration server to learn a first address; and

in which exchanging the modality handoff signal is performed by transmitting

it to the first address.

27.   The device of claim 19, in which the processor is further adapted to:

30   receive data from both the original leg and the alternate leg; and

    combine the data received from the original leg and from the alternate

leg to form a combined data stream of a single one of the CSV and VoX

modalities.

28.   The device of claim 27, in which the processor is further adapted to:

        convert the data received from one of the original leg and the alternate leg to
be of the other one of the CSV and VoX modalities prior to combining.

29.   The device of claim 27, in which the processor is further adapted to:

        determine a difference in delay between transferring data along the
        original leg and the alternate leg; and

        adjust a delay in one of the original leg and the alternate leg according
        to the difference.

30.   The device of claim 19, in which the processor is further adapted to:

        receive data from both the original leg and the alternate leg; and
        analyze the exchange of data to detect a silent period.

31.   A device comprising:

        means for establishing an original leg of a telephone call connection using one
of a CSV modality and a VoX modality;

        means for transferring data of a voice conversation between the original leg
and a voice channel that terminates in one of a speaker and a microphone pursuant to
the telephone call connection;

        means for receiving an address signal encoding an access address;

        means for making a handoff call to the access address responsive to receiving
the address signal;

        means for establishing from the handoff call an alternate leg of the telephone
call connection using the other one of the two modalities while the original leg is still
established; and

        means for then transferring data of the voice conversation between the voice
channel and the alternate leg pursuant to the telephone call connection.

32.   The device of claim 31, further comprising:

        means for coupling the alternate leg with the voice channel for transferring
data between them.

33.   The device of claim 31, further comprising:

means for tearing down the original leg while transferring data of the voice conversation between the voice channel and the alternate leg.

34.   The device of claim 31, further comprising:
       means for exchanging a modality handoff signal after transferring voice data over the original leg, and
       in which the address signal is received responsive to exchanging the modality handoff signal.

35.   The device of claim 31, in which
       exchanging the modality handoff signal is performed by transmitting it over the original leg.

36.   The device of claim 31, in which
       exchanging the modality handoff signal is performed by receiving it over the original leg.

37.   The device of claim 31, further comprising:
       means for accessing a registration server to learn a first address; and
       in which exchanging the modality handoff signal is performed by transmitting it to the first address.

38.   The device of claim 31, further comprising:
       means for receiving data from both the original leg and the alternate leg; and
       means for combining the data received from the original leg and from the alternate leg to form a combined data stream of a single one of the CSV and VoX modalities.

39.   The device of claim 38, further comprising:
       means for converting the data received from one of the original leg and the alternate leg to be of the other one of the CSV and VoX modalities prior to combining.

40.   The device of claim 38, further comprising:

means for determining a difference in delay between transferring data along the original leg and the alternate leg; and

means for adjusting a delay in one of the original leg and the alternate leg according to the difference.

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41.   The device of claim 31, further comprising:

means for receiving data from both the original leg and the alternate leg; and

means for analyzing the exchange of data to detect a silent period.

10   42.   A device comprising:

means for establishing an original leg of a telephone call connection using one of a CSV modality and a VoX modality;

means for transferring data of a voice conversation between the original leg and a voice channel that terminates in one of a speaker and a microphone pursuant to

15   the telephone call connection;

means for transmitting an address signal encoding an access address;

means for receiving a handoff call at the access address;

means for establishing from the handoff call an alternate leg of the telephone call connection using the other one of the two modalities while the original leg is still

20   established; and

means for then transferring data of the voice conversation between the voice channel and the alternate leg pursuant to the telephone call connection.

43.   The device of claim 42, further comprising:

25   means for coupling the alternate leg with the voice channel for transferring data between them.

44.   The device of claim 42, further comprising:

means for tearing down the original leg while transferring data of the voice

30   conversation between the voice channel and the alternate leg.

45.   The device of claim 42, further comprising:

means for receiving an identity code about the original leg; and

means for using the identity code for coupling the voice channel with the alternate leg.

46.   The device of claim 42, further comprising:
        means for exchanging a modality handoff signal after transferring voice data over the original leg, and
        in which the address signal is received responsive to exchanging the modality handoff signal.

47.   The device of claim 46 in which
        exchanging the modality handoff signal is performed by transmitting it over the original leg.

48.   The device of claim 46, in which
        exchanging the modality handoff signal is performed by receiving it over the original leg.

49.   The device of claim 46, further comprising:
        means for accessing a registration server to learn a first address; and
        in which exchanging the modality handoff signal is performed by transmitting it to the first address.

50.   The device of claim 42, further comprising:
        means for receiving data from both the original leg and the alternate leg; and
        means for combining the data received from the original leg and from the alternate leg to form a combined data stream of a single one of the CSV and VoX modalities.

51.   The device of claim 50, further comprising:
        means for converting the data received from one of the original leg and the alternate leg to be of the other one of the CSV and VoX modalities prior to combining.

52.   The device of claim 50, further comprising:

means for determining a difference in delay between transferring data along the original leg and the alternate leg; and

means for adjusting a delay in one of the original leg and the alternate leg according to the difference.

53.   The device of claim 42, further comprising:

means for receiving data from both the original leg and the alternate leg; and

means for analyzing the exchange of data to detect a silent period.

54.   An article comprising: a storage medium, the storage medium having instructions stored thereon, in which when the instructions are executed by at least one device, they result in:

establishing an original leg of a telephone call connection using one of a CSV modality and a VoX modality;

transferring data of a voice conversation between the original leg and a voice channel that terminates in one of a speaker and a microphone pursuant to the telephone call connection;

receiving an address signal encoding an access address;

making a handoff call to the access address responsive to receiving the address signal;

establishing from the handoff call an alternate leg of the telephone call connection using the other one of the two modalities while the original leg is still established; and

then transferring data of the voice conversation between the voice channel and the alternate leg pursuant to the telephone call connection.

55.   The article of claim 54, in which the instructions further result in:

coupling the alternate leg with the voice channel for transferring data between them.

56.   The article of claim 54, in which the instructions further result in:

tearing down the original leg while transferring data of the voice conversation between the voice channel and the alternate leg.

57.   The article of claim 54, in which the instructions further result in:

exchanging a modality handoff signal after transferring voice data over the original leg, and

in which the address signal is received responsive to exchanging the modality
5   handoff signal.

58.   The article of claim 57, in which

exchanging the modality handoff signal is performed by transmitting it over the original leg.

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59.   The article of claim 57, in which

exchanging the modality handoff signal is performed by receiving it over the original leg.

15 60.   The article of claim 57, in which the instructions further result in:

accessing a registration server to learn a first address; and

in which exchanging the modality handoff signal is performed by transmitting it to the first address.

20 61.   The article of claim 54, in which the instructions further result in:

receiving data from both the original leg and the alternate leg; and

combining the data received from the original leg and from the alternate leg to form a combined data stream of a single one of the CSV and VoX modalities.

25 62.   The article of claim 61, in which the instructions further result in:

converting the data received from one of the original leg and the alternate leg to be of the other one of the CSV and VoX modalities prior to combining.

63.   The article of claim 61, in which the instructions further result in:
30   determining a difference in delay between transferring data along the original leg and the alternate leg; and

adjusting a delay in one of the original leg and the alternate leg according to the difference.

64. The article of claim 54, in which the instructions further result in:

receiving data from both the original leg and the alternate leg; and

analyzing the exchange of data to detect a silent period.

5   65. An article comprising: a storage medium, the storage medium having instructions stored thereon, in which when the instructions are executed by at least one device, they result in:

establishing an original leg of a telephone call connection using one of a CSV modality and a VoX modality;

10   transferring data of a voice conversation between the original leg and a voice channel that terminates in one of a speaker and a microphone pursuant to the telephone call connection;

transmitting an address signal encoding an access address;

receiving a handoff call at the access address;

15   establishing from the handoff call an alternate leg of the telephone call connection using the other one of the two modalities while the original leg is still established; and

then transferring data of the voice conversation between the voice channel and the alternate leg pursuant to the telephone call connection.

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66. The article of claim 65, in which the instructions further result in:

coupling the alternate leg with the voice channel for transferring data between them.

25   67. The article of claim 65, in which the instructions further result in:

tearing down the original leg while transferring data of the voice conversation between the voice channel and the alternate leg.

68. The article of claim 65, in which the instructions further result in:

30   receiving an identity code about the original leg; and

using the identity code for coupling the voice channel with the alternate leg.

69. The article of claim 65, in which the instructions further result in:

exchanging a modality handoff signal after transferring voice data over the original leg, and

in which the address signal is received responsive to exchanging the modality handoff signal.

70.   The article of claim 60, in which

exchanging the modality handoff signal is performed by transmitting it over the original leg.

71.   The article of claim 60, in which

exchanging the modality handoff signal is performed by receiving it over the original leg.

72.   The article of claim 60, in which the instructions further result in:

accessing a registration server to learn a first address; and

in which exchanging the modality handoff signal is performed by transmitting it to the first address.

73.   The article of claim 65, in which the instructions further result in:

receiving data from both the original leg and the alternate leg; and

combining the data received from the original leg and from the alternate leg to form a combined data stream of a single one of the CSV and VoX modalities.

74.   The article of claim 73, in which the instructions further result in:

converting the data received from one of the original leg and the alternate leg to be of the other one of the CSV and VoX modalities prior to combining.

75.   The article of claim 73, in which the instructions further result in:

determining a difference in delay between transferring data along the original leg and the alternate leg; and

adjusting a delay in one of the original leg and the alternate leg according to the difference.

76.   The article of claim 65, in which the instructions further result in:

receiving data from both the original leg and the alternate leg; and

analyzing the exchange of data to detect a silent period.

77. A method comprising:

establishing an original leg of a telephone call connection using one of a CSV modality and a VoX modality;

transferring data of a voice conversation between the original leg and a voice channel that terminates in one of a speaker and a microphone pursuant to the telephone call connection;

receiving an address signal encoding an access address;

making a handoff call to the access address responsive to receiving the address signal;

establishing from the handoff call an alternate leg of the telephone call connection using the other one of the two modalities while the original leg is still established; and

then transferring data of the voice conversation between the voice channel and the alternate leg pursuant to the telephone call connection.

78. The method of claim 77, further comprising:

coupling the alternate leg with the voice channel for transferring data between them.

79. The method of claim 77, further comprising:

tearing down the original leg while transferring data of the voice conversation between the voice channel and the alternate leg.

80. The method of claim 77, further comprising:

exchanging a modality handoff signal after transferring voice data over the original leg, and

in which the address signal is received responsive to exchanging the modality handoff signal.

81. The method of claim 80, in which

exchanging the modality handoff signal is performed by transmitting it over the original leg.

82.   The method of claim 80, in which
exchanging the modality handoff signal is performed by receiving it over the original leg.

83.   The method of claim 80, further comprising:
accessing a registration server to learn a first address; and
in which exchanging the modality handoff signal is performed by transmitting it to the first address.

84.   The method of claim 77, further comprising:
receiving data from both the original leg and the alternate leg; and
combining the data received from the original leg and from the alternate leg to form a combined data stream of a single one of the CSV and VoX modalities.

85.   The method of claim 84, further comprising:
converting the data received from one of the original leg and the alternate leg to be of the other one of the CSV and VoX modalities prior to combining.

86.   The method of claim 84, further comprising:
determining a difference in delay between transferring data along the original leg and the alternate leg; and
adjusting a delay in one of the original leg and the alternate leg according to the difference.

87.   The method of claim 77, further comprising:
receiving data from both the original leg and the alternate leg; and
analyzing the exchange of data to detect a silent period.

88.   A method comprising:
establishing an original leg of a telephone call connection using one of a CSV modality and a VoX modality;

transferring data of a voice conversation between the original leg and a voice channel that terminates in one of a speaker and a microphone pursuant to the telephone call connection;

transmitting an address signal encoding an access address;

5 receiving a handoff call at the access address;

establishing from the handoff call an alternate leg of the telephone call connection using the other one of the two modalities while the original leg is still established; and

then transferring data of the voice conversation between the voice channel and

10 the alternate leg pursuant to the telephone call connection.

89. The method of claim 88, further comprising:

coupling the alternate leg with the voice channel for transferring data between them.

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90. The method of claim 88, further comprising:

tearing down the original leg while transferring data of the voice conversation between the voice channel and the alternate leg.

20 91. The method of claim 88, further comprising:

receiving an identity code about the original leg; and

using the identity code for coupling the voice channel with the alternate leg.

92. The method of claim 88, further comprising:

25 exchanging a modality handoff signal after transferring voice data over the original leg, and

in which the address signal is received responsive to exchanging the modality handoff signal.

30 93. The method of claim 92, in which

exchanging the modality handoff signal is performed by transmitting it over the original leg.

94. The method of claim 92, in which

exchanging the modality handoff signal is performed by receiving it over the original leg.

95.   The method of claim 92, further comprising:

5   accessing a registration server to learn a first address; and

in which exchanging the modality handoff signal is performed by transmitting it to the first address.

96.   The method of claim 88, further comprising:

10   receiving data from both the original leg and the alternate leg; and

combining the data received from the original leg and from the alternate leg to form a combined data stream of a single one of the CSV and VoX modalities.

97.   The method of claim 96, further comprising:

15   converting the data received from one of the original leg and the alternate leg to be of the other one of the CSV and VoX modalities prior to combining.

98.   The method of claim 96, further comprising:

determining a difference in delay between transferring data along the original

20   leg and the alternate leg; and

adjusting a delay in one of the original leg and the alternate leg according to the difference.

99.   The method of claim 88, further comprising:

25   receiving data from both the original leg and the alternate leg; and

analyzing the exchange of data to detect a silent period.